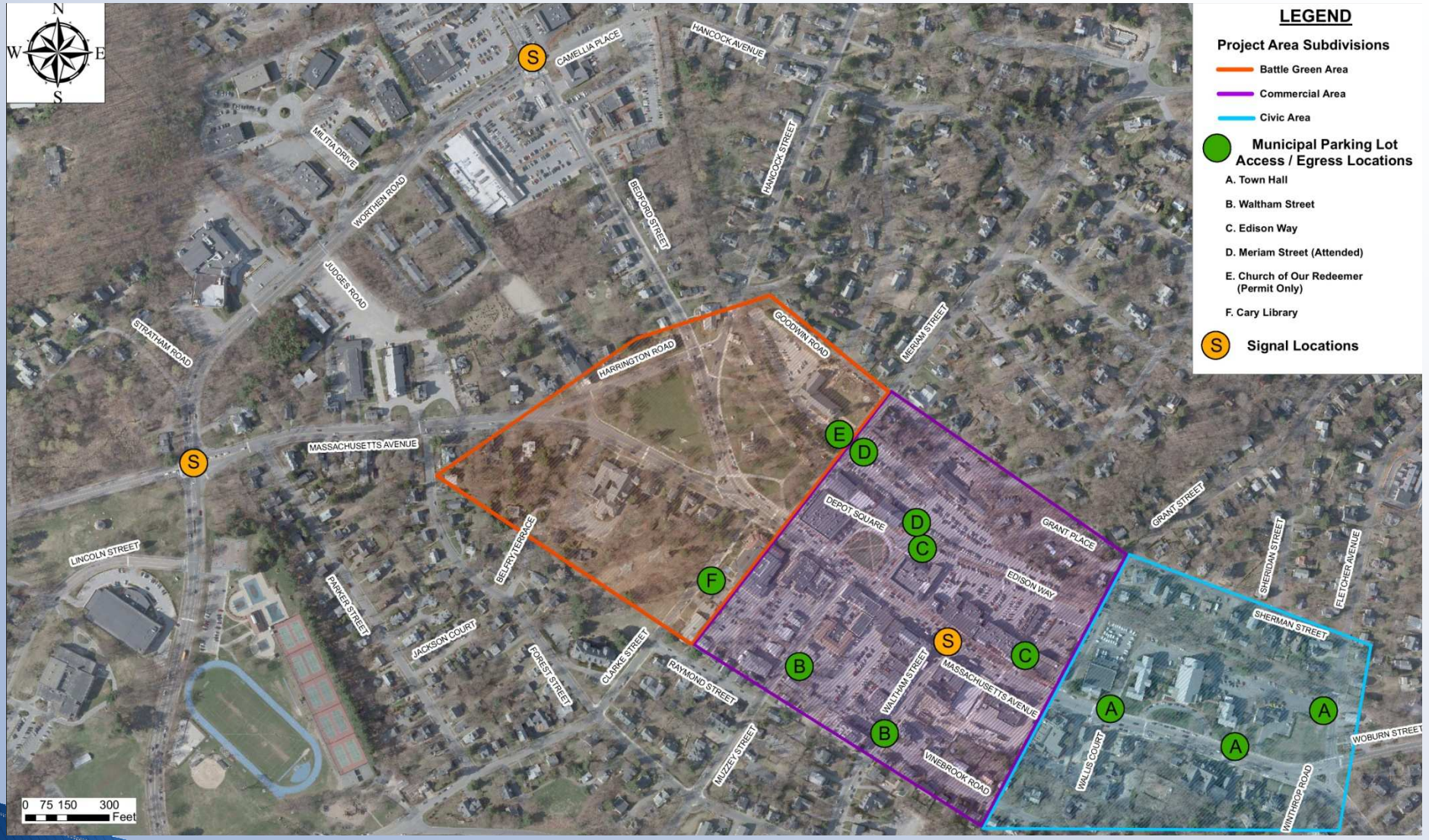
Downtown Streetscape Project
Lexington, MA

Traffic Data and
Preliminary Analysis Results

Board of Selectmen Meeting
July 1, 2013

Project Area



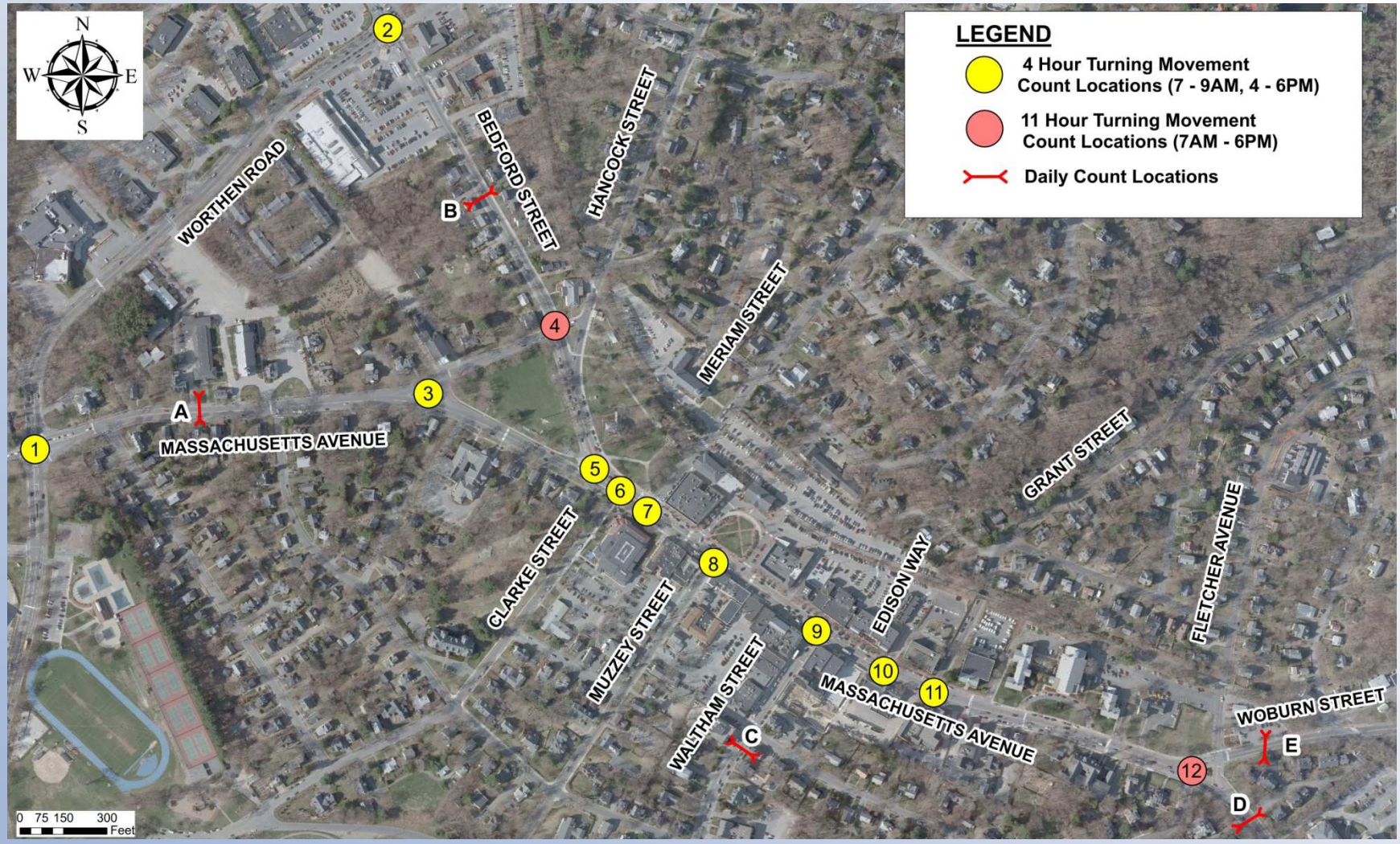
BETA

Project Objectives (Transportation):

- Collect & analyze traffic volumes
- Collect & analyze data on intersection crashes
- Evaluate future traffic alternatives

Resulting roadway configuration will feed into the Streetscape Design

Existing Traffic Volumes



Collection Date: Wednesday, April, 3, 2013

Volumes Collected: Vehicles, Pedestrians and Bicycles

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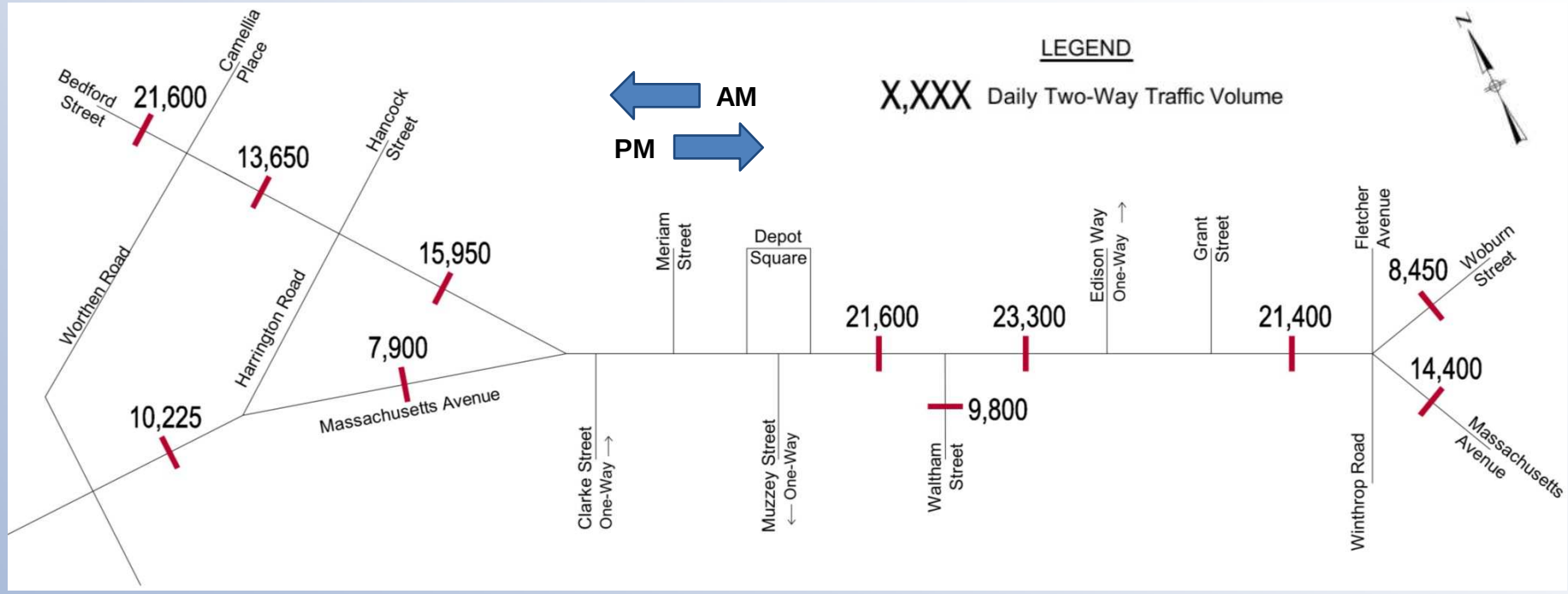
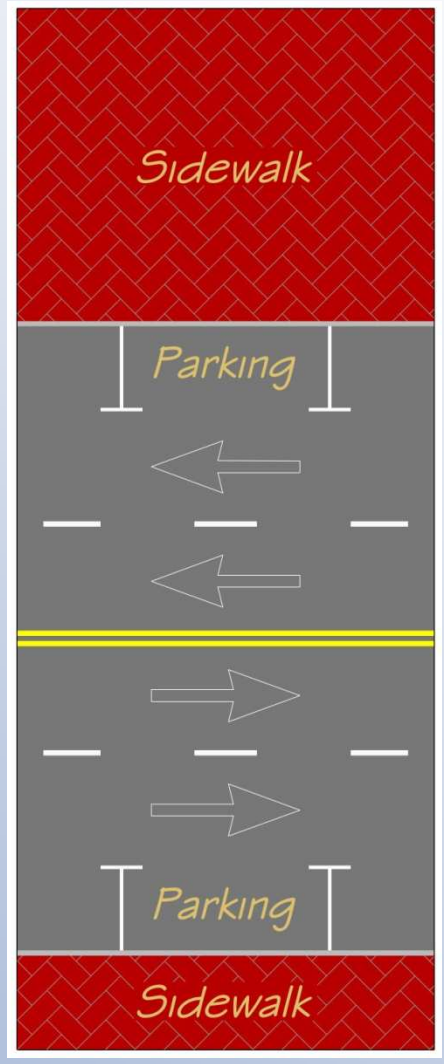
Existing Traffic Volumes



- Highest volume occurs through the Core Downtown Area
- Great deal of mixing traffic
  - North-South
  - East-West

Existing Lane-Use



Two Lanes EB & WB

Level of Service Criteria

LOS	Signalized Intersections (Average Seconds of Delay/ Vehicle)	Unsignalized Intersections (Average Seconds of Delay/ Vehicle)
A	< 10.0	< 10.0
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.0 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	> 80.0	> 50.0

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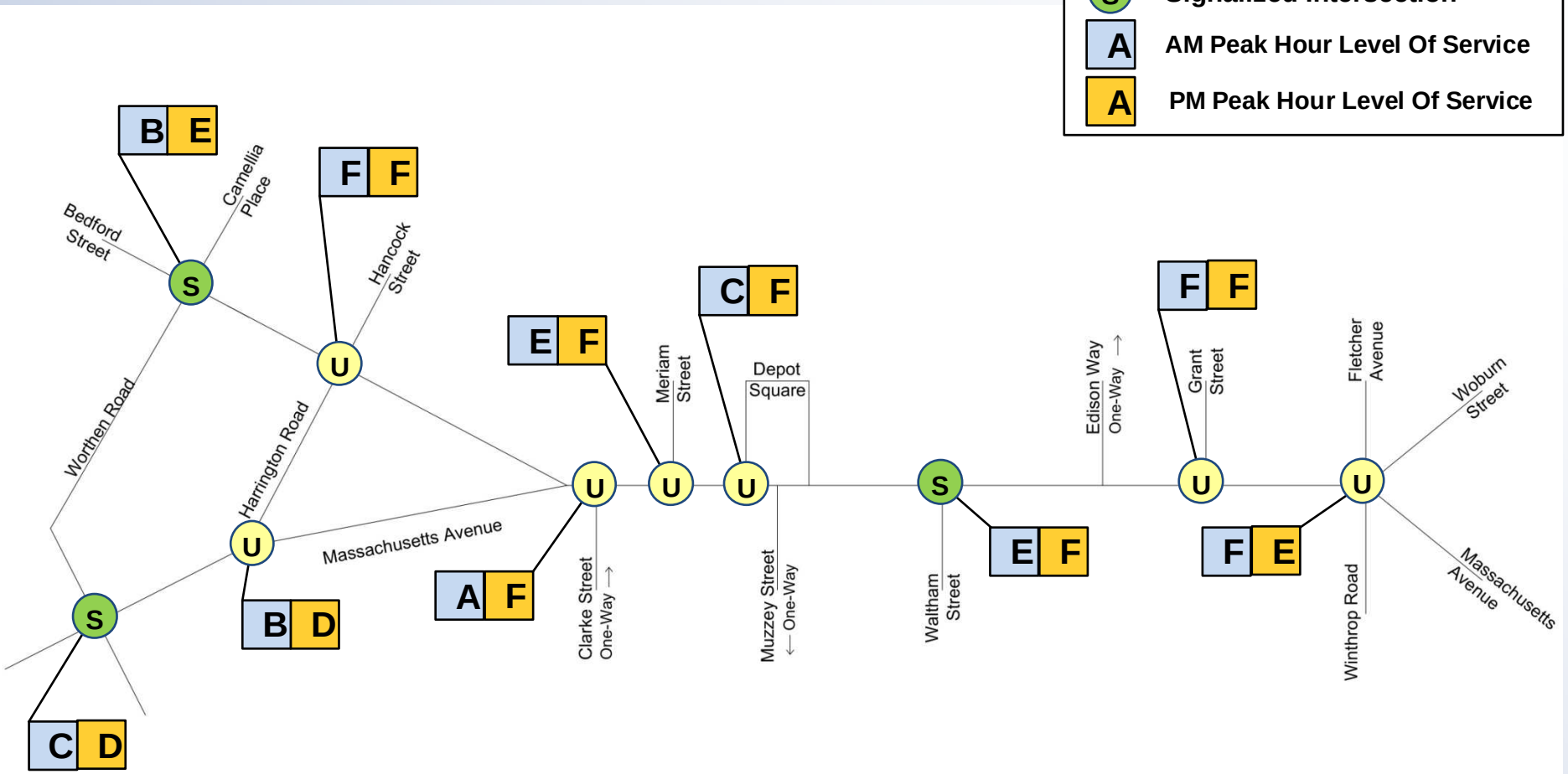
Existing Conditions Analysis Summary



Intersection Crash History (2008-2010)

Crashes Within Entire Study Area = 196

Existing Morning Peak Hour

Existing Afternoon Peak Hour

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Roadway Alternatives

Roadway Alternatives

- **3-Lane vs. 4-Lane**
  - **Screening Analysis:**
    - Evaluated Three 3-Lane Alternatives
  - **Full Analysis:**
    - One 3-Lane Alternative (Greatest Capacity)
- **Other Alternatives**
  - **Full Analysis**
    - Evaluated Three Alternatives

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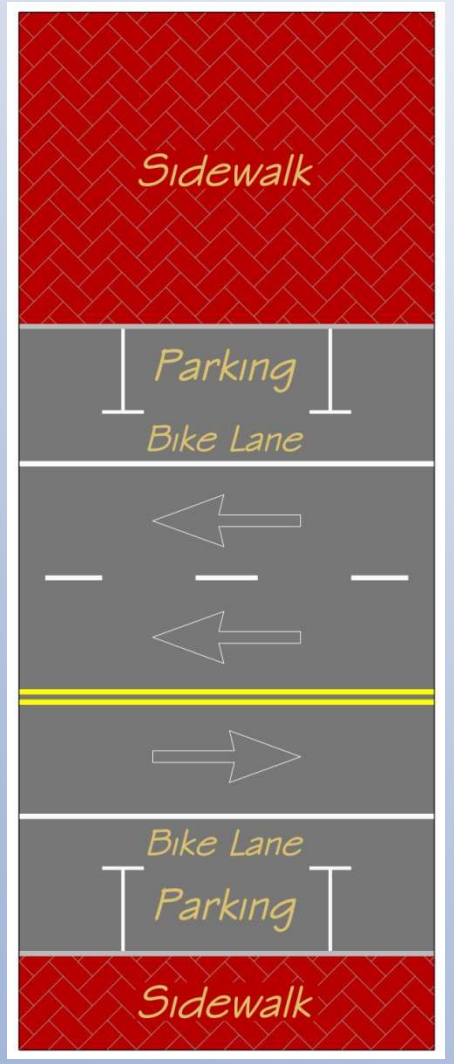
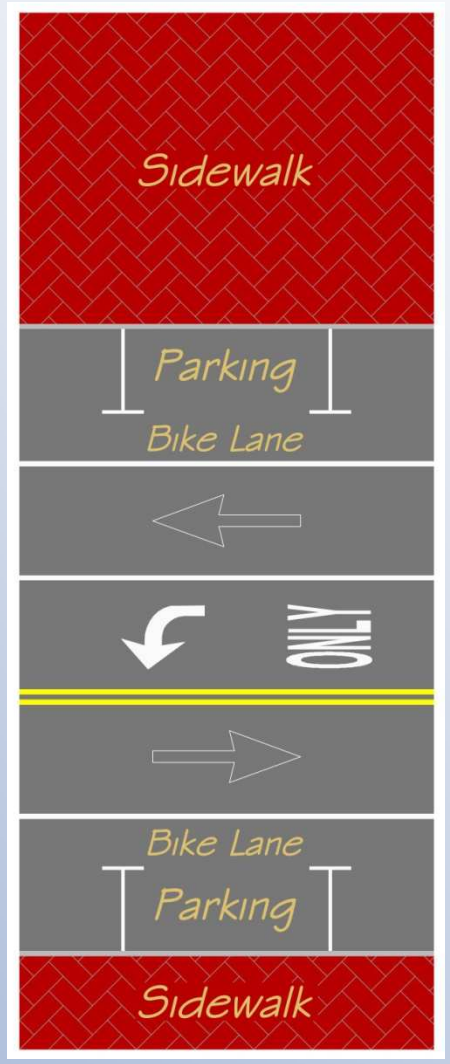
3-Lane Configurations Considered

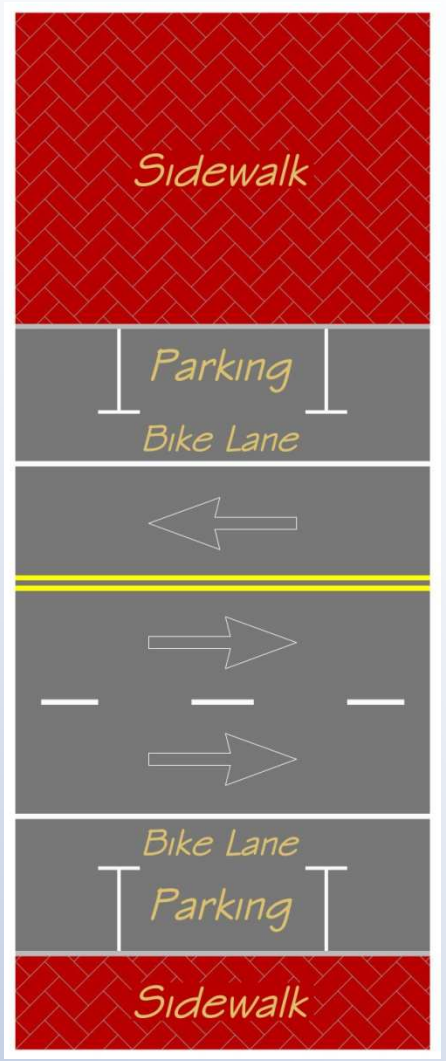


1 EB, 2 WB



1 EB, 1 WB

+ Turning Lanes



2 EB, 1 WB

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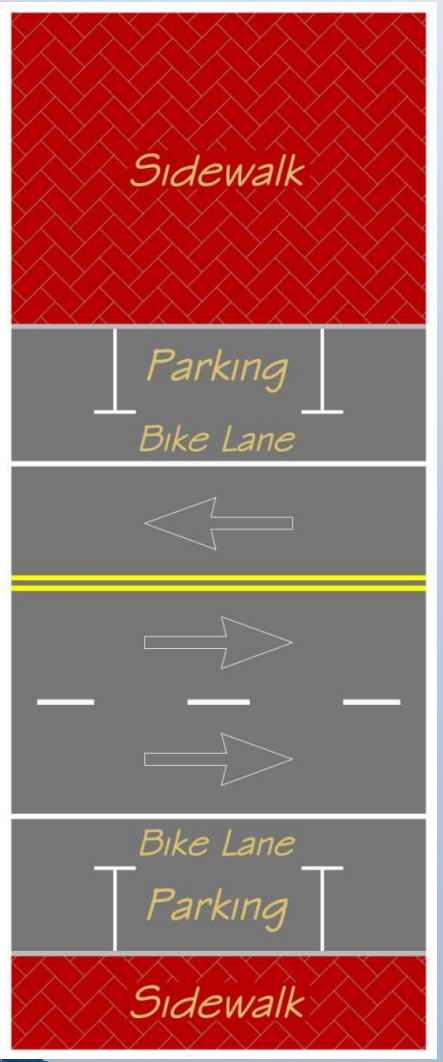
3-Lane Configurations



- 2 EB + 1 WB >> Greatest 3-Lane Capacity
- Existing Peak Hour Volumes
  - (Mass Ave @ Waltham St)
    - AM: 2,200 vph
    - PM: 2,240 vph
- 4-Lane Capacity: **2,600 vph**
- 3-Lane Capacity: **1,700 vph**
- Capacity Difference: -900 vph **(-34%)**

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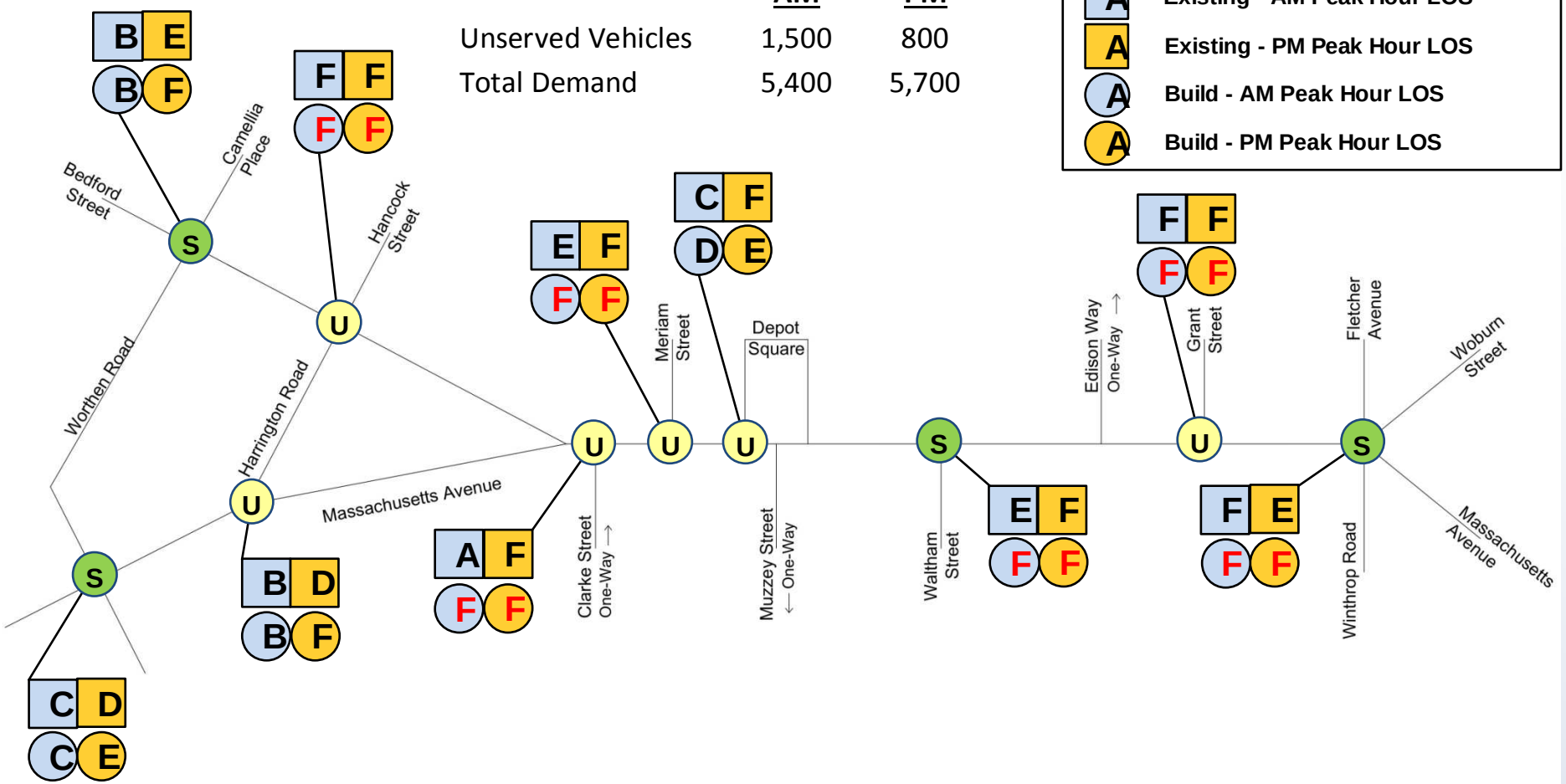
3-Lane Configuration Analysis

	AM	PM
Unserved Vehicles	1,500	800
Total Demand	5,400	5,700

LEGEND

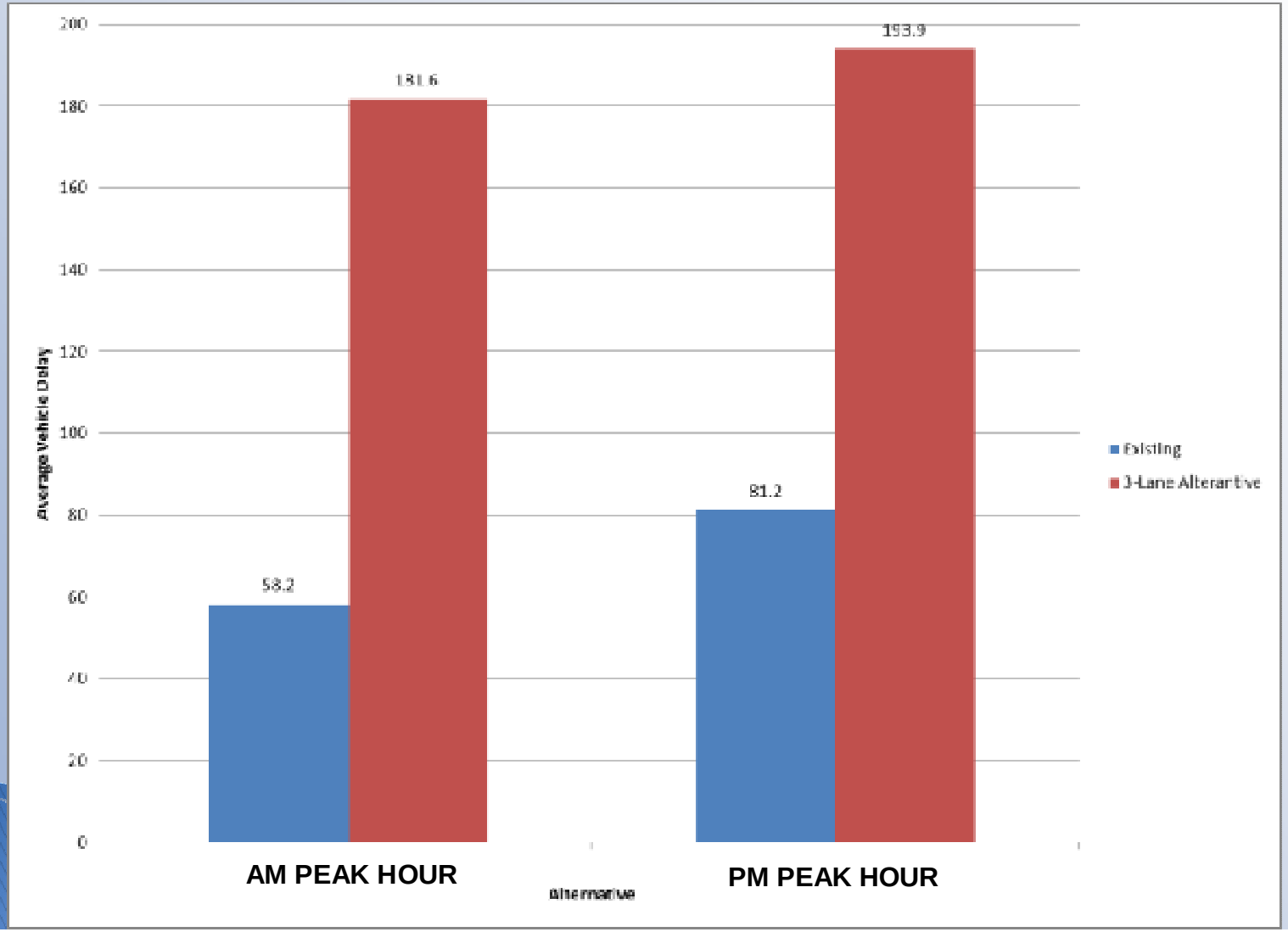
- U — Unsignalized Intersection
- S — Signalized Intersection
- A — Existing - AM Peak Hour LOS
- A — Existing - PM Peak Hour LOS
- A — Build - AM Peak Hour LOS
- A — Build - PM Peak Hour LOS



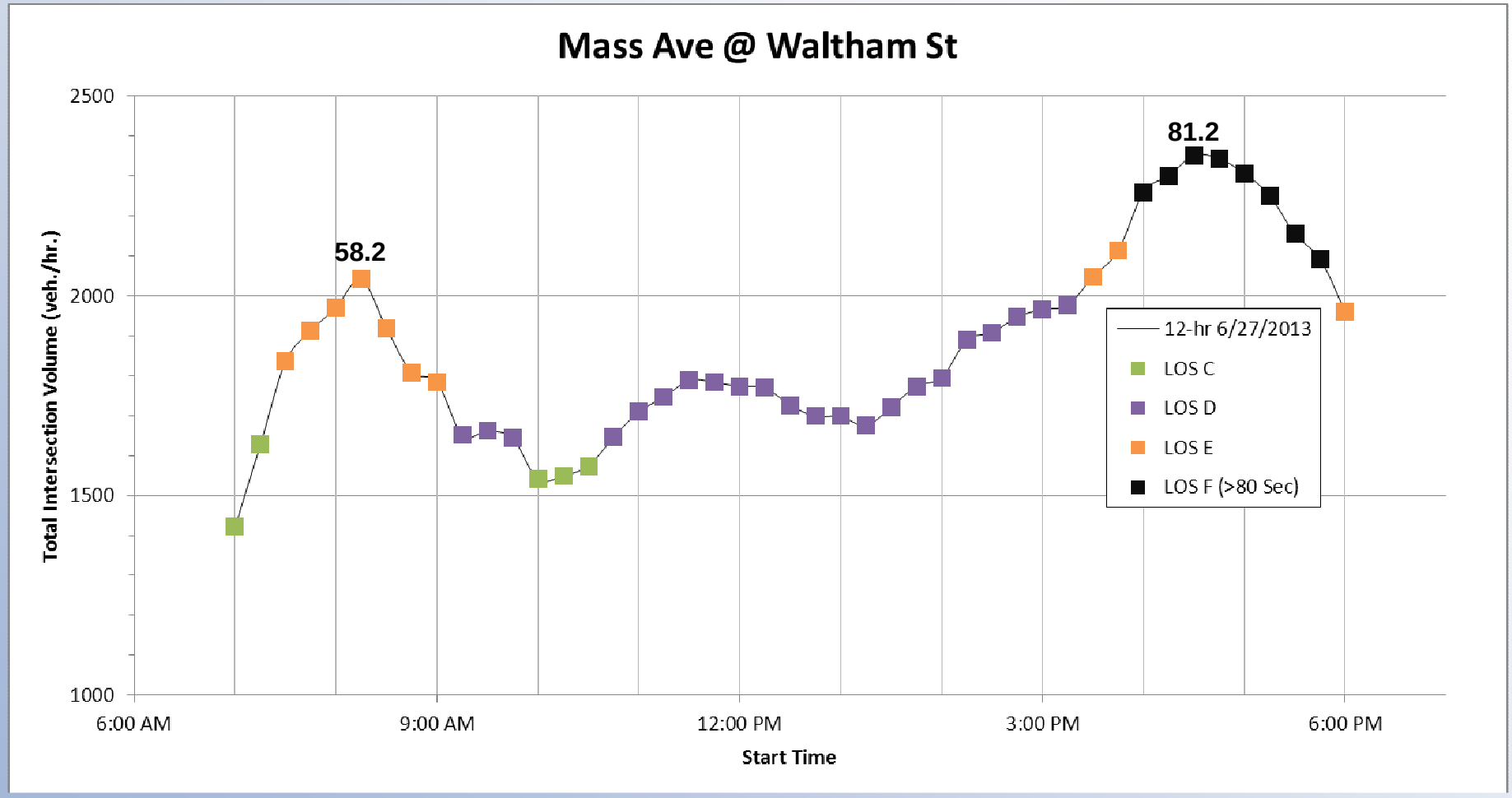
3-Lane Configuration Analysis

Average Vehicle Delay

	AM	PM
Existing	58.2	81.2
3-Lane	181.6	193.9

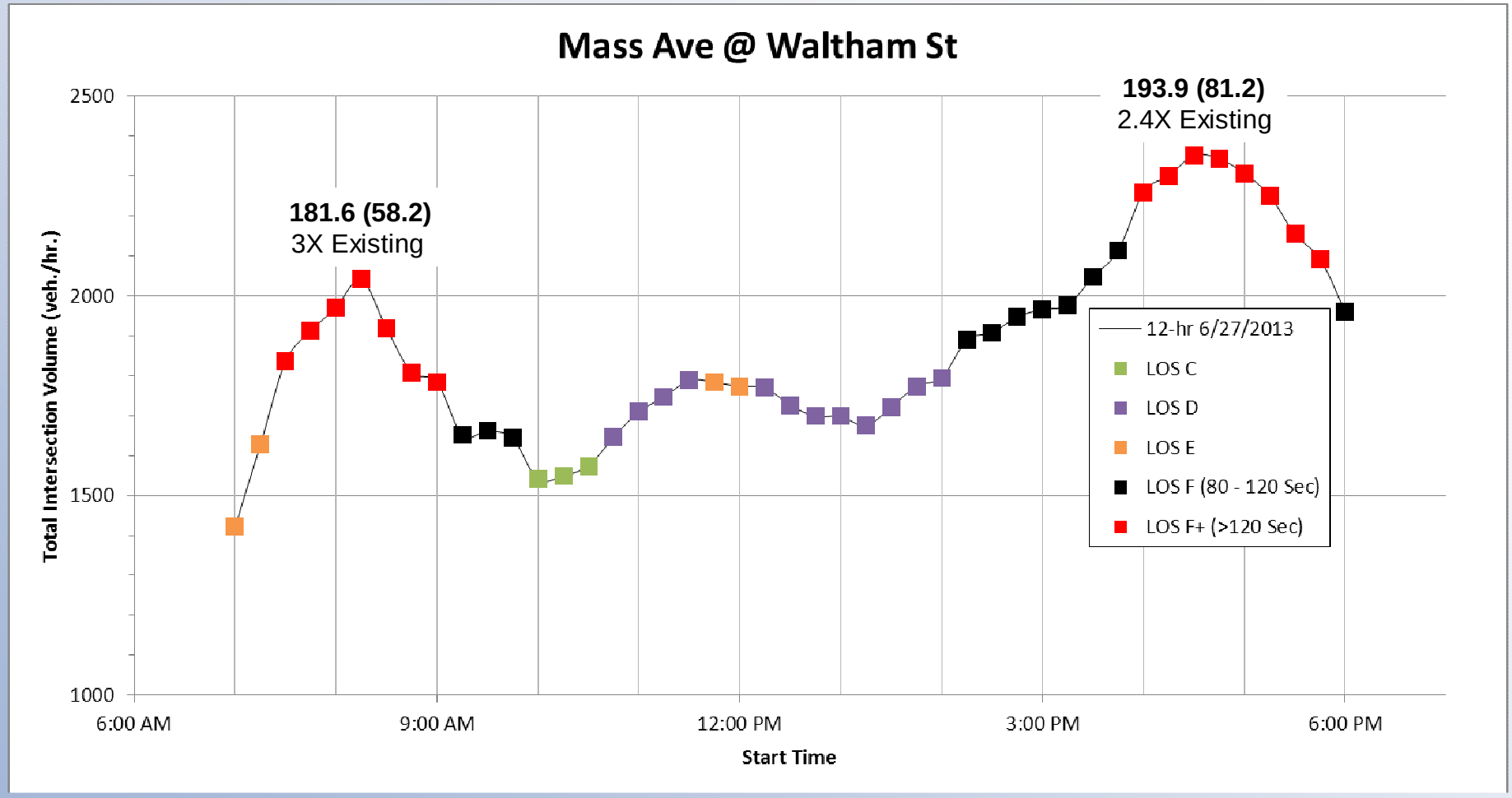


Level of Service - Existing Conditions



	Existing
LOS E	**2.50 Hrs.**
LOS F	**2.00 Hrs.**
Total	**4.5 Hrs.**

Level of Service – 3-Lane Conditions



	Existing	3-Lane
LOS E	**2.50 Hrs.**	**1.00 Hrs.**
LOS F	**2.00 Hrs.**	**2.75 Hrs.**
LOS F+	**-**	**3.75 Hrs.**
Total	**4.5 Hrs.**	**7.5 Hrs.**

3-Lane Configuration – Morning Peak Hour

Summary

- Heavy traffic volume during peak hours
- Great deal of mixing traffic
- Traffic operations under a 3-Lane Alternative would degrade significantly from Existing Conditions

Average Vehicle Delay

	AM	PM
Existing	**58.2**	**81.2**
3-Lane	**181.6**	**193.9**

	Existing	3-Lane
LOS E	**2.50 Hrs.**	**1.00 Hrs.**
LOS F	**2.00 Hrs.**	**2.75 Hrs.**
LOS F+	**-**	**3.75 Hrs.**
Total	**4.50 Hrs.**	**7.50 Hrs.**

- **Recommend Maintaining 4-Lane Configuration**

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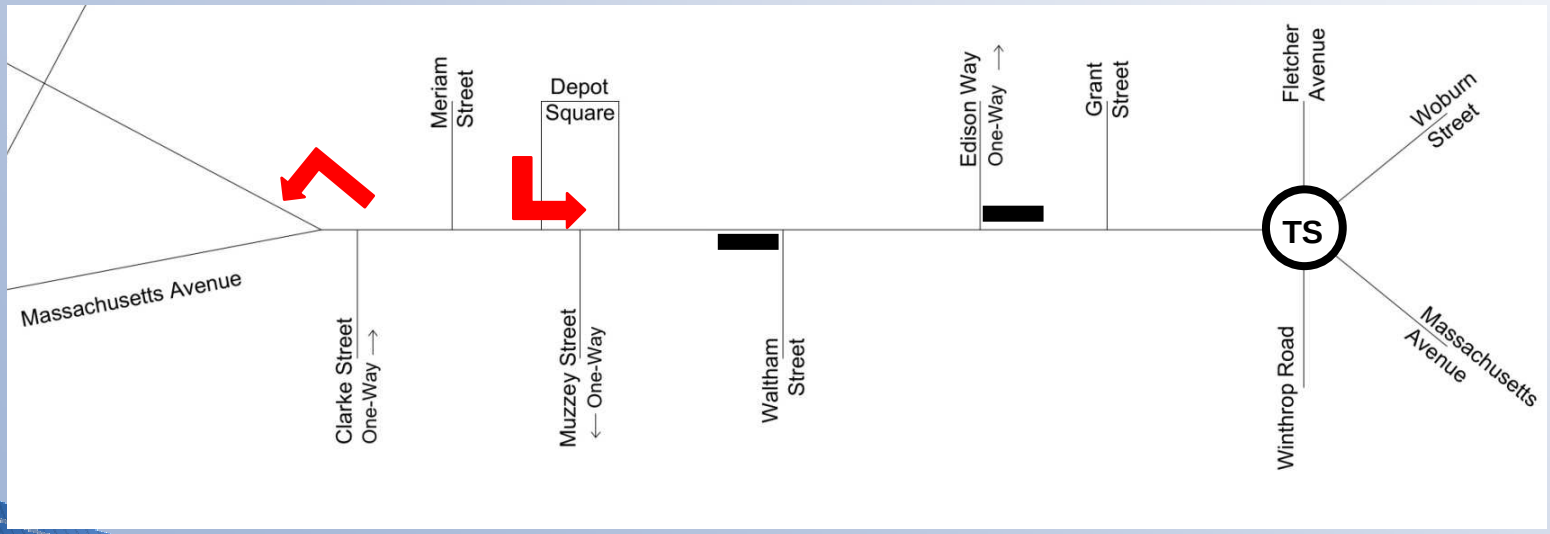
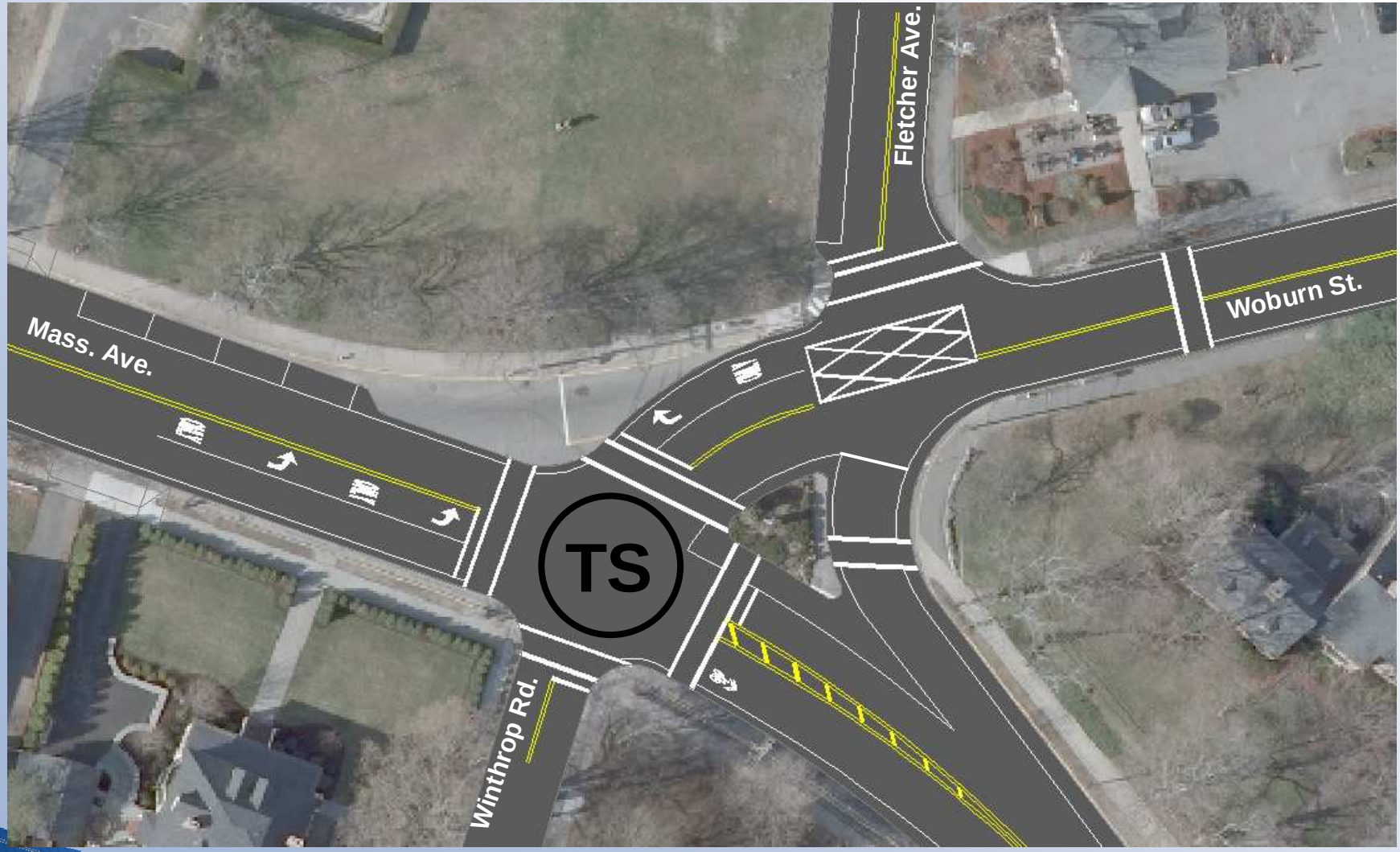
Part 2
Other Alternatives

4-Lane Configuration – Alternative A

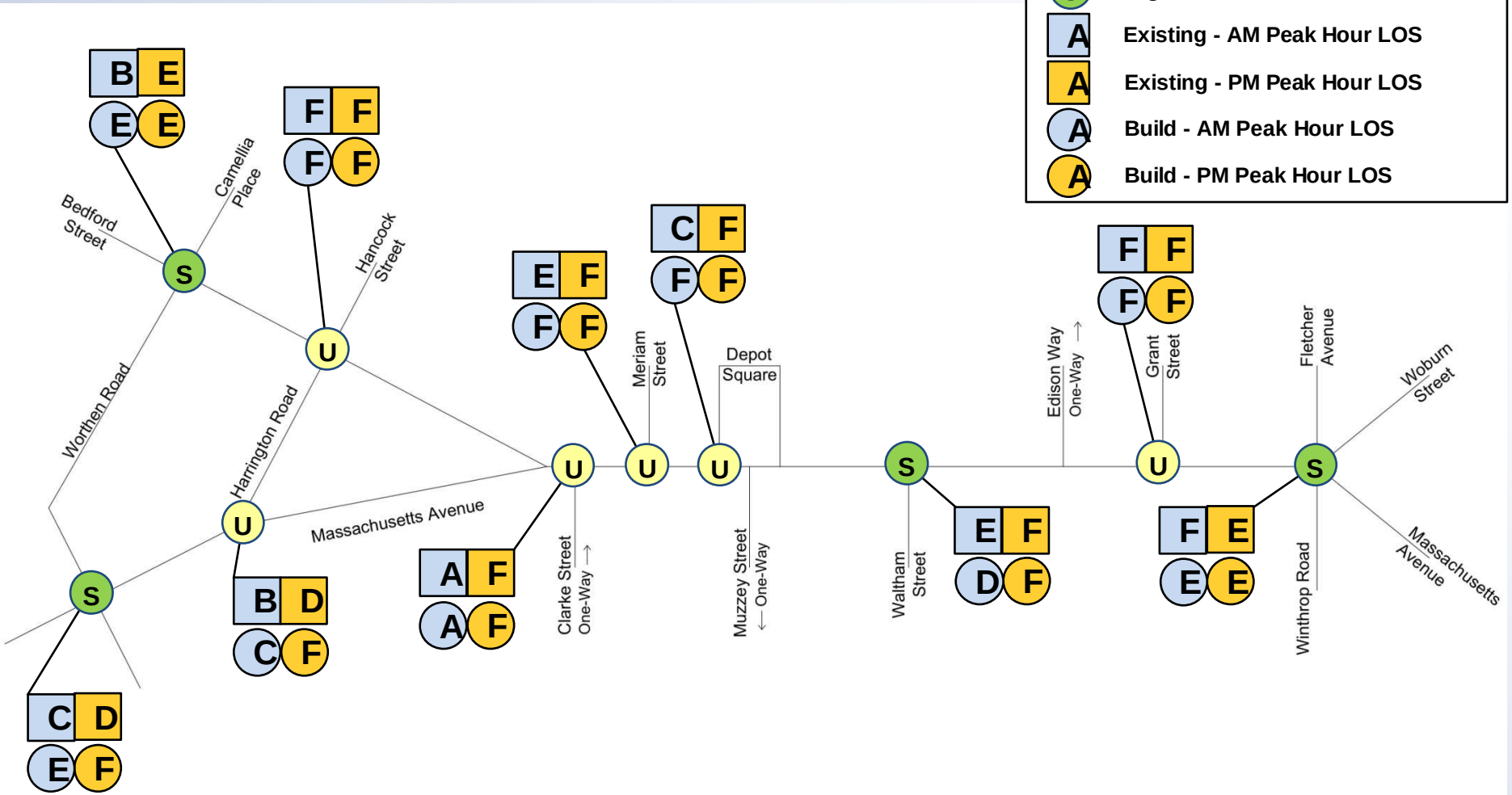
- Includes:
  - Prohibit Mass. Avenue westbound left-turn at Battle Green
  - Prohibit left-turn from Depot Square
  - Signal timing modification at Waltham Street
  - Remove eastbound right-turn lane at Waltham Street
  - Remove westbound right-turn lane at Edison Way
  - Traffic signal installation at Woburn Street (Concept 1)



Woburn Street Intersection – Concept 1

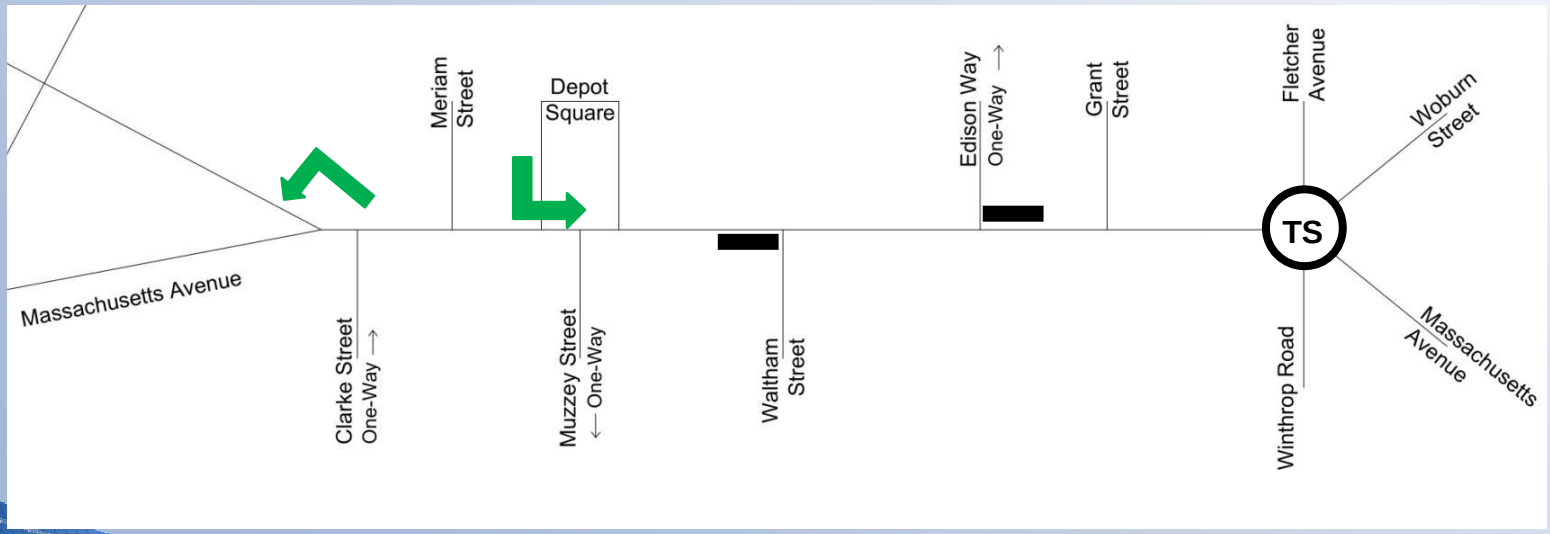


4-Lane Configuration – Alternative A

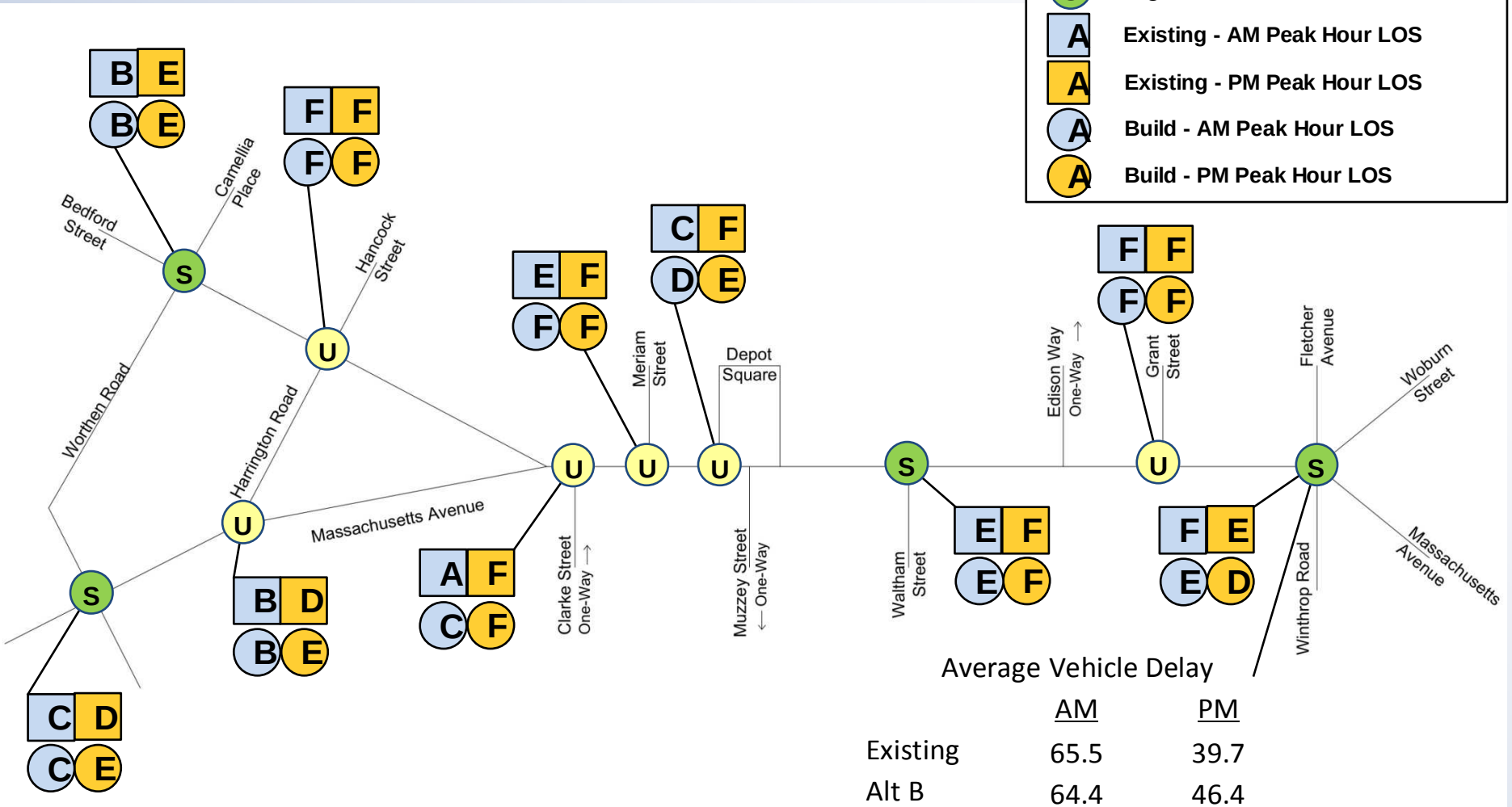


4-Lane Configuration – Alternative B

- Includes:
  - Allow Mass. Avenue westbound left-turn at Battle Green
  - Allow left-turn from Depot Square
  - Signal timing modification at Waltham Street
  - Remove eastbound right-turn Lane at Waltham Street
  - Remove westbound right-turn Lane at Edison Way
  - Traffic signal installation at Woburn Street (Concept 1)



4-Lane Configuration – Alternative B

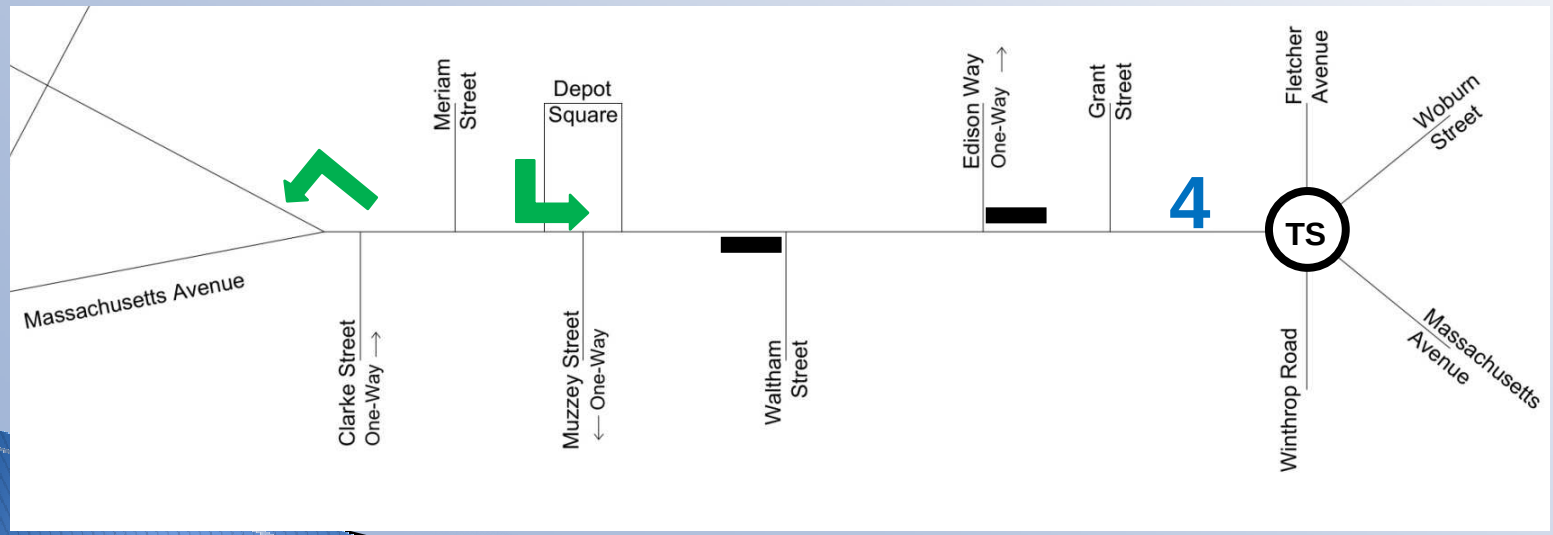


Average Vehicle Delay

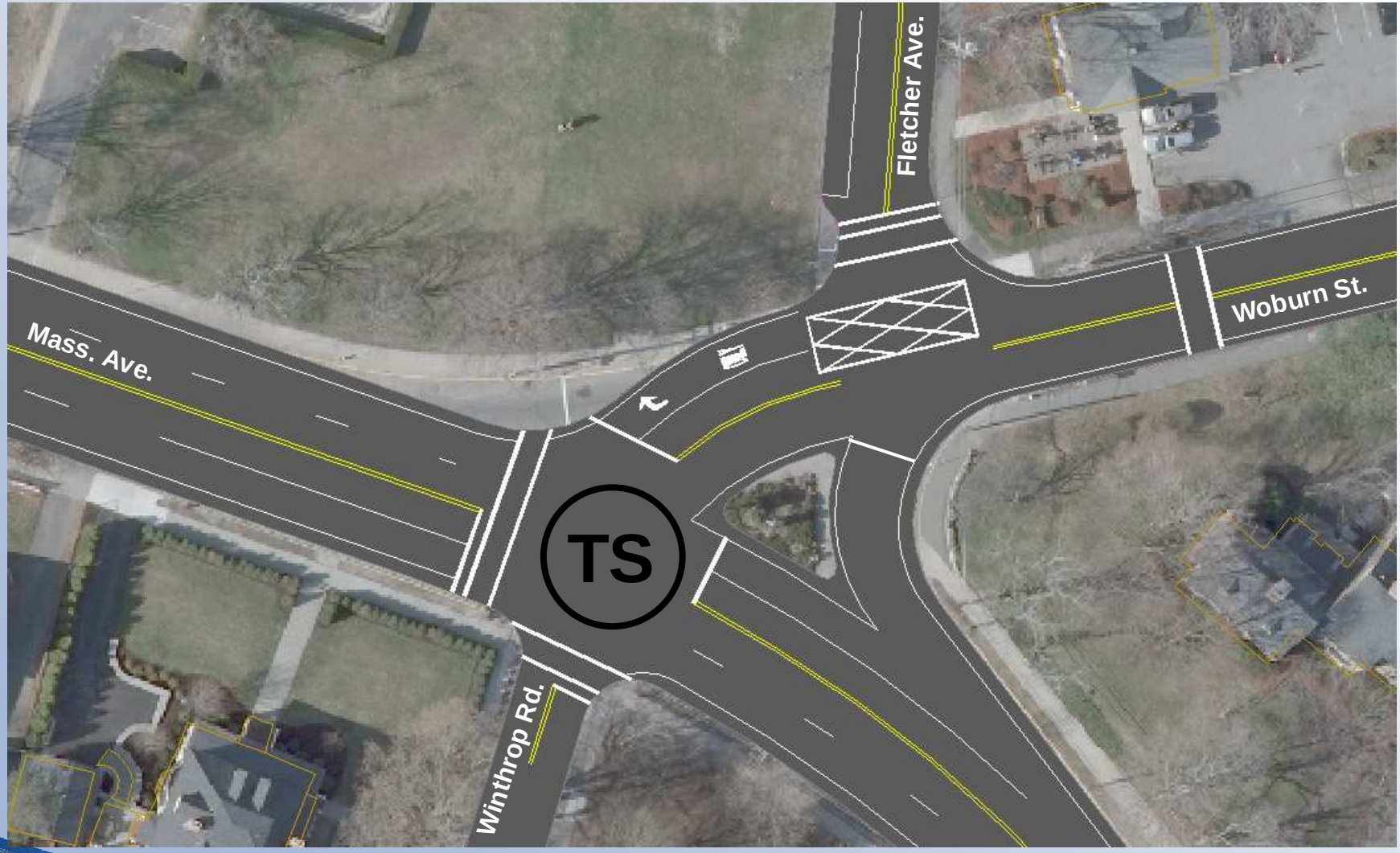
	AM	PM
Existing	65.5	39.7
Alt B	64.4	46.4

4-Lane Configuration – Alternative C

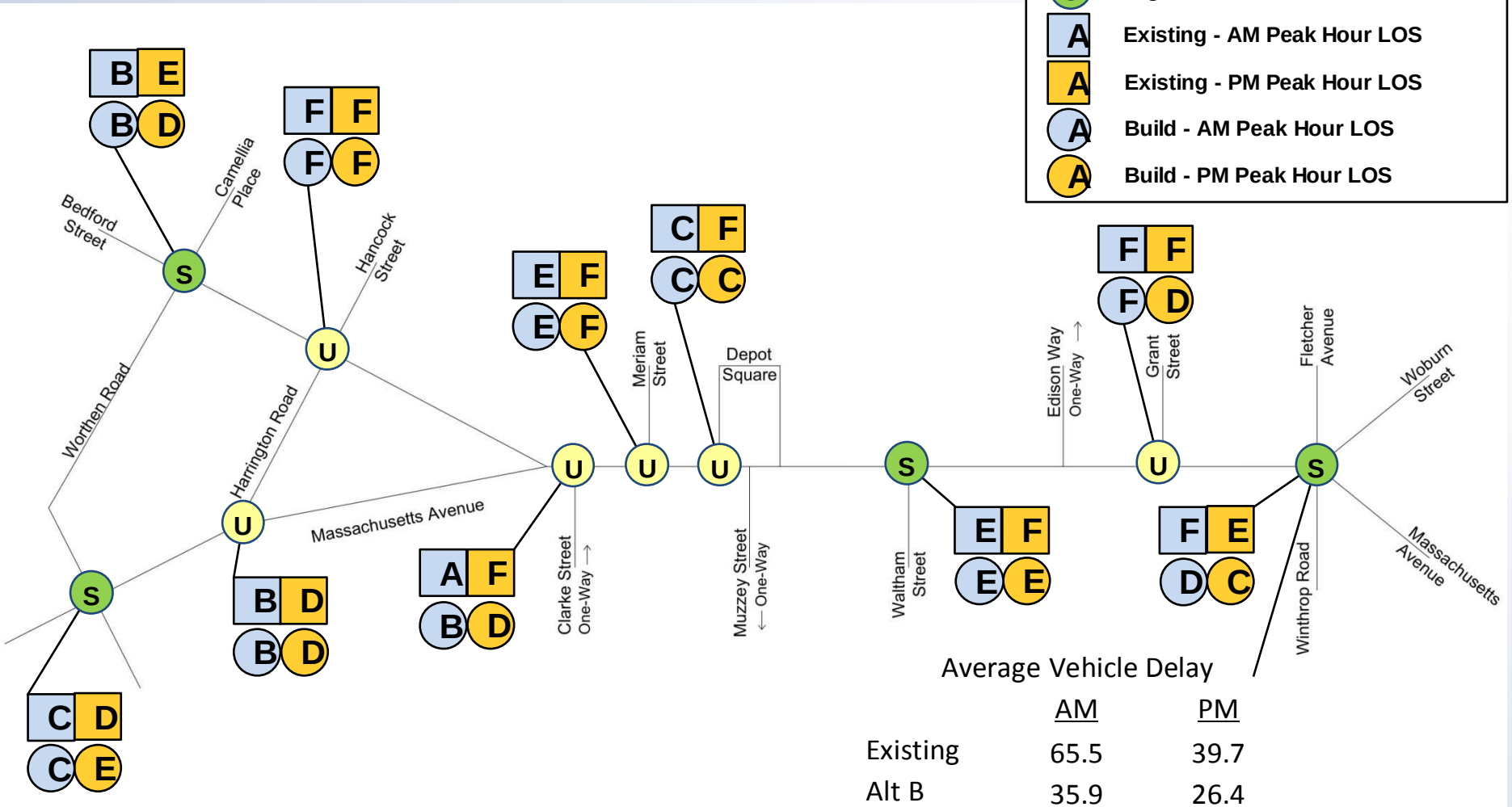
- Includes:
  - Allow Mass. Avenue westbound left-turn at Battle Green
  - Allow left-turn from Depot Square
  - Signal timing modification at Waltham Street
  - Remove eastbound right-turn lane at Waltham Street
  - Remove westbound right-turn lane at Edison Way
  - Extend 4-Lane section between Grant Street & Woburn Street
  - Traffic signal installation at Woburn Street (Concept 2)



Woburn Street Intersection – Concept 2



4-Lane Configuration – Alternative C



Average Vehicle Delay

	AM	PM
Existing	65.5	39.7
Alt B	35.9	26.4

Summary

- Heavy traffic volume during peak hours
- Great deal of mixing traffic
- Traffic operations under the 3-Lane Alternative would degrade significantly from Existing Conditions
- Improvements are possible with 4-Lane Configuration

Questions?